

BEFORE THE
Federal Communications Commission
WASHINGTON, D.C

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FEDERAL COMMUNICATIONS COMMISSION

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In the Matter of)
Federal-State Joint Board on) CC Docket No. 96-45
Universal Service)

COMMENTS OF TELE-COMMUNICATIONS, INC.

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TABLE OF CONTENTS

	PAGE
I. INTRODUCTION	1
II. THE COMMISSION SHOULD APPLY SUBSIDIES ONLY WHERE ABSOLUTELY NECESSARY	2
III. THE COMMISSION SHOULD USE SUBSIDIES TO ENSURE AFFORDABILITY OF SPECIFIC CORE SERVICES AND SHOULD RELY ON COMPETITION TO FURTHER POLICY GOALS	5
A. Only The Core Services Proposed In The Notice Should Be Included In The Definition Of Universal Service	5
B. The Commission Has Substantial Discretion To Determine How To Apply Subsidies To The Core Services	9
C. Federal Subsidies Should Be Designed To Maximize Reliance Upon Competition to Fulfill the Universal Service Goals	11
D. The Commission Must Eliminate Regulations That Arbitrarily Favor Incumbents	13
E. Consistent With Section 254(j), The FCC Should Leave Low-Income Subsidy Programs Largely To The States	16
IV. THE COMMISSION SHOULD REQUIRE PROVISION OF ONLY CORE SERVICES TO SCHOOLS AND LIBRARIES AND SHOULD ALLOW THE MARKET TO PROVIDE OTHER SERVICES	17
A. Telecommunications Service Providers Should Only Be Required To Provide The Core Services To Schools And Libraries	18
B. Companies Are Already Providing Both Training And Facilities To Schools And Libraries Without Subsidized Rates	21
V. THE COMMISSION SHOULD PROVIDE ASSISTANCE TO HEALTH CARE PROVIDERS WITHOUT HARMING COMPETITION	24
VI. CONCLUSION	25

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Tele-Communications, Inc., ("TCI") hereby files its Comments in response to the Commission's Notice of Proposed Rulemaking in the above-captioned proceeding.¹

I. INTRODUCTION

As a current provider of competitive local services through its ownership interests in Teleport and Sprint Spectrum, a current provider of information services and as a company with an established commitment to the business of providing telecommunications services to schools and libraries, TCI has a strong interest in the manner in which the Commission implements the universal service provisions of the Telecommunications Act of 1996.

¹ Federal-State Joint Board on Universal Service, CC Docket No. 96-45, FCC 96-93, Notice of Proposed Rulemaking and Order Establishing Joint Board (released March 8, 1996) ("Universal Service NPRM").

TCI firmly supports the legislative policy of promoting quality telecommunications services on an affordable, universal basis. TCI urges the Commission to ensure that universal service is administered in a manner that encourages rather than hinders the development of competition for the provision of telecommunications and information services. Specifically, TCI urges the Commission to limit the number of services that telecommunications carriers are required to provide and or support through internal subsidies. Where reliance on subsidies is necessary, they should be narrowly targeted. To the extent possible, however, the Commission should rely on the promotion of competition to further its universal service goals. Such an approach limits the inefficiencies and likely competitive imbalances created by even the most sophisticated subsidy mechanisms. It also fulfills the Congressional policy of promoting a pro-competitive, deregulatory national telecommunications policy.

II. THE COMMISSION SHOULD APPLY SUBSIDIES ONLY WHERE ABSOLUTELY NECESSARY.

A critical element of managing the transition from legally protected local telephone monopolies to a competitive local market is the elimination, to the extent possible, of the

historical reliance on internal subsidies to promote universal service.² This is so for three fundamental reasons.

First, subsidies are inefficient. There is no need here to describe in detail what has been repeated often elsewhere.³ In general, subsidies cause consumers to purchase (and sellers to produce) more of a subsidized good than they would if its price were based on the actual cost of providing it. The corollary is that subsidies cause consumers to purchase less (and sellers to produce less) of a taxed or subsidizing good than they otherwise would. Both situations result in a net economic loss to society. In other words, unless a subsidy creates positive externalities that exceed the cost of providing it, a subsidy makes society poorer.

Second, subsidies are usually unfair. This is true in general because subsidies do not require consumers to pay for the costs they impose on society (although as described below, this is not unwarranted in certain cases). The unfairness can be especially acute with unfocused subsidies, such as those that apply to all consumers in a designated area. Such mechanisms deliver the subsidy even to those in the designated area who

² As used in this discussion, the term "internal subsidy" means a subsidy collected and distributed entirely within an industry.

³ See e.g., Alfred E. Kahn, The Road to More Intelligent Telephone Pricing, 1 Yale J. on Reg. 139 (1984); Alfred E. Kahn & William B. Hew, Current Issues in Telecommunications Regulations: Pricing, 4 Yale J. on Reg. 191 (1987).

would be willing and able to pay for the full cost of providing the service. To the extent that subscribers in other areas pay for the subsidy through higher rates, it is possible that a poor person could actually end up subsidizing more affluent consumers in the designated area.⁴

Finally, even when administered in a competitively neutral manner (a dubious proposition in the case of telephony), subsidies can harm competition. A subsidy system that imposes substantial costs on new entrants will create a barrier to entry. Moreover, most subsidies are based on either the reported cost of providing the subsidized service or some proxy. In either case, incumbent carriers have the incentive to overstate the reported or proxy costs and to keep the difference. Given the incumbent's dominance in the local market, most of the consumers to whom the subsidy is targeted subscribe to the incumbent's service. The extra subsidy dollars gained by the incumbent can be used to strategically underprice service where competitive entry is threatened. The more extensive the subsidy structure, the more excess funds that are likely to be available for this purpose.

⁴ Even if the low-income subscriber's service is subsidized through some other regulatory mechanism, he or she is still likely to end up paying for part of the area-wide subsidy system. This is because business subscribers will also have to pay for the subsidy. They, in turn, will pass these extra costs onto consumers, one of whom will be the low-income subscriber.

III. THE COMMISSION SHOULD USE SUBSIDIES TO ENSURE AFFORDABILITY OF SPECIFIC CORE SERVICES AND SHOULD RELY ON COMPETITION TO FURTHER POLICY GOALS.

The new law explicitly codifies universal service as a significant policy goal. While written in sweeping, forward-looking terms, the statute does not specifically define the scope of universal service and it does not prescribe the means of achieving it. The few restrictions placed on the FCC (and the Joint Board) are in fact focused on limiting their ability to implement universal service in overreaching ways, most especially by prohibiting overly broad definitions of universal service. Congress did not mandate the use of subsidies as the sole or the preferred means to achieve its objectives. Rather, it set forth general policy objectives, and gave the Commission the authority to facilitate them through a variety of means. The Commission should use this delegation of authority to limit the use of internal subsidies and rely upon competition wherever possible.

A. Only The Core Services Proposed In The Notice Should Be Included In The Definition Of Universal Service.

Section 254(c)(1) contains one of the few actual policy prescriptions for universal service relevant to this proceeding. Under Section 254(c)(1), the Commission is required to define the telecommunications services that are to be supported by federal support mechanisms.⁵ As defined in the Communications Act, the term telecommunications service is a term of art which excludes

⁵ See 47 U.S.C. § 254(c)(1).

any service in which the provider adds value or alters the content of the transmission.⁶ The Commission may not, therefore, include "information services"⁷ in the set of services that may be supported by federal support mechanisms under Section 251 (c) (1).⁸ Indeed, the Senate version of the bill at one time included within the description of universal service not only telecommunications services but information services as well.⁹ By rejecting this language, Congress specifically narrowed the range of potential services that the FCC could designate for universal service support under Section 251(c) (1), and thus removed FCC discretion in this area.

⁶ Section 3(a) (1) (B) (48) defines "telecommunications" as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." 47 U.S.C. § 153(a) (1) (B) (43). Section 3(a) (1) (B) (51) defines "telecommunications service" as "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used." 47 U.S.C. § 153(a) (1) (B) (46).

⁷ Section 3(a) (1) (B) (41) defines the term "information service" as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service." 47 U.S.C. § 153(a) (1) (B) (20).

⁸ This is in contrast to the range of possible services prescribed by the FCC under 254(c) (3) for availability to public institutional telecommunications users.

In addition to this limitation, Section 254(c) also contains important guidelines for determining which telecommunications services should be eligible for federal subsidy.¹⁰ For example, it establishes a statutory presumption against requiring universal service subsidy for services (such as data transmission capability, optional Signaling System Seven features, or blocking of such features, or broadband transmission services) that are not "essential to education, public health, or safety" and are not "subscribed to by a substantial majority of residential subscribers."¹¹

This statutory scheme is consistent with Commission precedent. The Commission has already defined, and that definition has held for over two decades, the class of services so essential as to be subject to common carrier obligations. Only certain basic (renamed "telecommunications" under the 1996 Act) services, are so necessary to the nation's infrastructure as to warrant government intrusion into the prices at which they are

⁹ See S. 1822, 103d Cong., 2d Sess. § 102(a) (1994).

¹⁰ See 47 U.S.C. § 254(c). The four factors listed are that the subsidized telecommunications services (A) are essential to education, public health, or public safety, (B) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers, (C) are being deployed in public telecommunications networks by telecommunications carriers, and (D) are consistent with the public interest, convenience, and necessity. Id.

¹¹ Id.

offered.¹² Given the inefficiencies created by enlarging the internal subsidy program, there is a manifest need to define its scope in a precise and disciplined manner.

Thus, in order to fulfill the requirements of Section 254 and to promote the policy of regulating prices only when necessary, the Commission must carefully circumscribe both the current and the future scope of the set of services that will have to be supported by the telecommunications industry. The Commission's proposal to include only the five "core" telecommunications services listed in the Notices fulfills this policy well.¹³ Only these telecommunications services meet all of the requirements of Section 254(c)(1) and are necessary to provide citizens with the services necessary for connection to the nation's communications infrastructure.

Finally, for the purposes of future reevaluation of the list of subsidized services, it is critical to recognize the role that market choices play in guiding the definition of universal service. The requirements that the Commission consider the extent to which "a substantial majority of residential consumers" have subscribed to a particular service and whether a service is

¹² The regulatory dichotomy of basic and enhanced services is found in 47 C.F.R. § 64.702 -- the Computer Inquiry rules.

¹³ See Universal Service NPRM at ¶ 16 (proposing universal support for (1) voice grade access to the public switched network, (2) touch-tone, (3) single party service, (4) access to emergency services and (5) access to operator services).

being "deployed in public telecommunications networks by telecommunications carriers" indicate that Congress intended that the Commission follow rather than dictate customer choice when defining universal service.¹⁴ In adding to the list of subsidized services in the future, therefore, the Commission should only include services that meet these criteria.

B. The Commission Has Substantial Discretion To Determine How To Apply Subsidies To The Core Services.

Section 254(b) lists a series of "principles" upon which "[t]he Joint Board and the Commission shall base policies for the preservation and advancement of universal service."¹⁵ Those principles are aspirational. They state, for example, that "[q]uality services should be available at just, reasonable, and affordable rates;" that "[a]ccess to advanced telecommunications and information services should be provided in all regions of the Nation," and that low-income consumers and consumers in rural, insular and high cost areas should have access to the range of

¹⁴ 47 U.S.C. § 254(c)(1)(B), (C). The Notice appears to suggest that low subscription levels for a particular service might indicate a need for a subsidy. This suggestion is flawed for two reasons: (1) the low penetration factor could just as easily indicate low demand, and (2) Congress has expressly required that high penetration be the basis for implementing a subsidy. Id.

¹⁵ 47 U.S.C. § 254(b).

services that are available in urban areas at prices that are "reasonably comparable" to those charged in urban areas.¹⁶

Importantly, Section 254 says nothing about how these goals should be achieved.¹⁷ Subsection (b), for example, does not require that rates for consumers in rural, insular and high cost areas always be subsidized to ensure that they are reasonably comparable to rates in urban areas,¹⁸ and it does not require that "quality services" be subsidized to ensure affordability. It does not presume that comparability and affordability do not exist today, or that they cannot be achieved via competition, or finally that alternative technologies such as PCS could not be relied upon to assure such comparability and affordability. In short, neither Subsection (b) nor Subsection (i) requires that subsidies be the means used to achieve the universal service goals.

¹⁶ Id. In addition, Section 254(i) includes a general statement, again aspirational, that "[t]he Commission and the States should ensure that universal service is available at rates that are just, reasonable, and affordable."

¹⁷ The only exception is the specific statement in Section 254(j) that "[n]othing in this section shall affect the collection, distribution, or administration of the Lifeline Assistance Program. . . ." 47 U.S.C. § 254(j).

¹⁸ This is in stark contrast to Section 254(g) which requires that rates charged by providers of interexchange telecommunications services in rural, insular and high cost areas be no higher than those charged to consumers in urban areas. See 47 U.S.C. § 254(g).

The Commission thus has considerably more latitude in preserving and promoting affordability for the core services than the Notice suggests.¹⁹ TCI urges the Commission, through the Joint Board and independently, to carefully investigate and analyze the facts in order to make the necessary reasoned judgments as to which areas may be in need of subsidies, and at what level those subsidies should be set.

C. Federal Subsidies Should Be Designed To Maximize Reliance Upon Competition to Fulfill the Universal Service Goals.

The Commission should exercise the discretion granted by Congress to reduce its reliance on subsidies to achieve universal service goals. Specifically, subsidies should be carefully targeted to those in demonstrable need of support. For rural, high-cost and insular areas, this means utilization of a reliable proxy model. For low-income consumers, this means relying upon the states to best target and define the group of consumers in need.

In order to most efficiently target federal subsidies to needed areas, the Commission should utilize a proxy model along the lines proposed by the Joint Sponsors as described in the

¹⁹ See Chevron v. Natural Resources Defense Council, 467 U.S. 837, 842-43 (1984) ("if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute").

Notice.²⁰ A proxy model helps to avoid the inefficiencies of relying on reported costs (i.e., the incentive of incumbent LECs to inflate reported costs).

Once competitive facilities-based entry occurs in a subsidized area, subsidy flows should stop.²¹ Competitive entry will in general not occur unless the new entrant has determined that it can supply telephone services at a price competitive with *the subsidized rate* of the incumbent monopolist. Frequently unable to assess what component of extant rates of the incumbent represents subsidy, the potential entrant makes its judgment to enter based on actual price levels. New entry, then, means lower-cost provision of service, yielding rates that no longer warrant subsidies.

For example, wireless service providers may soon be able to compete fully with incumbent LECs in rural, insular and high cost areas. Similarly, cable companies such as TCI expect to offer such services at lower costs than presently supplied. Such competition can be relied upon to lead to increased innovation, lower cost curves and lower prices.

²⁰ See MCI Communications Inc., NYNEX Corporation, Sprint/United Management Co., and US West Inc., Benchmark Costing Model: A Joint Submission, copyright 1995, CC Docket No. 80-286 (Dec. 1, 1995).

²¹ Because the subsidized services will be limited to primary residential service, the competitive entry that must be observed in order to remove the subsidy is for these services.

Furthermore, narrowing the availability of subsidies for rural, insular and high cost areas to monopoly contexts is most consistent with the other critical Congressional policy established in the 1996 Act, i.e., competition. Subsidies tend to disrupt the competitive process, even when intended to be competitively neutral. Incumbent carriers have an incentive to inflate subsidy requirements, because they will benefit the most from any excess subsidy (i.e., monies received over and above the actual costs reported or estimated). This incentive holds because, as the dominant carrier, the incumbent will serve the majority of consumers in the subsidized area. Increasing subsidies can also be an effective means of raising rivals' costs for the monopoly telephone company. Further, the incumbent then has control of an additional pool of monies to be used to strategically price against competitors and to discipline them in ways that diminish consumer welfare.

Therefore, eliminating subsidies to areas that have true, facilities-based competition will be an effective means by which the competitive goals of the Act can be facilitated.

D. The Commission Must Eliminate Regulations That Arbitrarily Favor Incumbents.

Competition can promote universal service, but only if the Commission eliminates the advantages past regulation has given incumbent LECs. Competitive neutrality is a statutorily-mandated principle for implementing all universal service objectives set forth in section 254.

For example, Section 254(b)(4) establishes as one of the key principles that universal service be implemented in a manner that "All providers of telecommunications services should make an equitable and nondiscriminatory contribution. . . ." This principle is echoed in Section 254(d), requiring that "Every telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis" Section 254(f) establishes a parallel obligation for intrastate carriers. Further, section 214(e) is added by the 1996 Act to ensure that all carriers that are willing to assume universal service obligations are eligible to receive the available funds.²²

Thus, the FCC must implement its universal service program to assure competitive neutrality. To fulfill this mandate, the FCC must ensure that new entrants that qualify as "eligible telecommunications carriers" under Section 214(e) gain access to whatever subsidy the Commission decides to establish. Second, programs such as Universal Service, DEM Weighting and Link Up America cannot continue to be implemented through the Commission's Part 36 jurisdictional separations rules since those

²² See 47 U.S.C. § 214(e)(2) ("Upon request . . . the State commission [except in rural areas] . . . shall . . . designate more than one common carrier as an eligible telecommunications carrier for a service area . . . so long as each additional requesting carrier meets the requirements of paragraph (1)").

rules do not apply to non-dominant carriers. Of course, all telecommunications carriers must contribute to the universal service funding mechanisms -- again, on a competitively neutral basis.²³

The Commission must also address the competitive imbalance created by the application of existing loan programs in which new entrants are generally not eligible to participate. For example, the Rural Utilities Service ("RUS") administers a series of federal programs designed to encourage investment in rural telephone facilities through the provision of low-interest loans and loan guarantees.²⁴ Cumulative loans under these programs have exceeded \$10.4 billion.²⁵ For new loans and loan guarantees over the last five years, these programs represent a subsidy estimated at \$126.2 million.²⁶ Critically, the RUS prohibits loan recipients from using RUS funds for providing telephone service to rural subscribers who "are already receiving adequate

²³ The funding requirement stands in sharp contrast to any purported obligation to provide certain services. There is no precondition to entry into local telephony that certain subsidized services be offered. See discussion at Sections IV, V infra.

²⁴ The RUS administers these loans pursuant to the Rural Electrification Act of 1936. See 7 U.S.C. §§ 901-950(b) (1994).

²⁵ See FCC, Universal Service Task Force, "Preparation for Addressing Universal Service Issues: A Review of Current Interstate Support Mechanisms," at 78 (Feb. 23, 1996).

²⁶ Id. at 81.

telephone service" from an incumbent carrier.²⁷ Thus, new entrants cannot qualify for RUS assistance. Although the FCC lacks jurisdiction to amend these subsidies, it can nevertheless address and rectify the competitive disadvantages created by this kind of program. Thus, in assessing the contribution obligations of carriers, the FCC should also account for the value received by local telephone companies under these other federal programs and adjust accordingly.²⁸

E. Consistent With Section 254(j), The FCC Should Leave Low-Income Subsidy Programs Largely To The States.

Subsidies for low-income users should remain largely within the province of the states. The FCC's current programs of Lifeline Assistance and Link Up have been largely defined and determined at the local level, since they ultimately rely upon means-tests established by the individual states to determine federal subsidies. In the case of Lifeline Assistance, state involvement is even more pronounced, since the states also determine the *levels* of funds that are then matched with federal contributions.

²⁷ 7 C.F.R. § 1737.11(a) (1995).

²⁸ The RUS was recently authorized to provide federal assistance through grants and loans in order to encourage and improve telemedicine services and distance learning services in rural areas. Federal Agricultural Improvement and Reform Act of 1996, Pub. L. No. 104-127, § 704 (1996). In support, the Act authorizes a \$100,000,000 per year appropriation for the next five years. *Id.* The FCC should ensure that the RUS implements this new program in a competitively neutral fashion as well.

As the Notice describes, these programs are currently funded through the separations process, and must be reworked accordingly. Continued reliance would otherwise mean that incumbent telephone companies and the National Exchange Carrier Association are the exclusive means for administering such programs. These programs should be fully returned to the states to maximize their efficacy.²⁹

Consistent with relying upon the states to administer low-income support, TCI does not believe the FCC should expand the proposed definition of universal service for low-income users. Any subsidy applicable to such services as free access to telephone information, toll limitation services and reduced service deposits are best implemented by the states -- the governmental bodies best able to craft these types of rules and to monitor accurately their effects.

IV. THE COMMISSION SHOULD REQUIRE PROVISION OF ONLY CORE SERVICES TO SCHOOLS AND LIBRARIES AND SHOULD ALLOW THE MARKET TO PROVIDE OTHER SERVICES.

TCI has substantial experience in the business of providing telecommunications services to schools and libraries. The Company firmly supports the goal of ensuring that schools obtain access to telecommunications services that increase educational

²⁹ In the case of Link Up, the Notice specifically acknowledges that the service which is supported is local in nature. See Notice at para. 64 ("The Link Up program's support comes, in part, through shifting LEC costs that would otherwise be recovered through rates for intrastate services to the interstate jurisdiction").

opportunities for students across the country. The Commission and the Joint Board should utilize this proceeding to assess whether subsidies are in fact required to achieve this goal.³⁰ TCI believes that there is ample evidence to suggest that market forces are already working efficiently to produce the desired goals.

In implementing Section 254(h)(1)(B), the Commission must not, indeed may not, require that all telecommunications carriers provide the full range of subsidized educational services. The Commission should instead require the provision of only core services to schools and libraries. It should further review whether other desired services need to be subsidized.

A. Telecommunications Service Providers Should Only Be Required To Provide The Core Services To Schools And Libraries.

Section 254(h)(1)(B) states that a telecommunications provider is obligated to provide any of "its services that are within the definition of universal service under subsection (c)(3)" at a discount upon a bona fide request.³¹ Subsection

³⁰ The Commission should consider that there are already programs that encourage the development of telecommunications services for educational purposes, not the least of which include federal tax incentives. In addition, the President recently signed into law a new program that authorizes the RUS to distribute federal dollars in the form of grants and loans to encourage and improve distance learning services in rural areas. See supra note 28.

³¹ See 47 U.S.C. § 254(h)(1)(B).

(c) (3), in turn, states that the Commission may add to the list of core federally subsidized services for the purposes of subsection (h).³²

Given that a carrier may only be required to provide its services to schools and libraries, the statute does not give the Commission the authority to require the provision to schools and libraries of services not already offered by that carrier. Further, the reference to a carrier's services strongly suggests that the list of required services must be carrier (i.e., regulated, basic) services.

Beyond requiring these core services, Subsection (h) (2) gives the Commission the authority to establish rules "to enhance . . . access to advanced telecommunications and information services" for qualifying schools, libraries and health care facilities.³³ Under this provision, the Commission could assess current market mechanisms such as competitive bidding and deem them to most efficiently attain the statutory requirements.

Such an approach is not just permissible, it is good public policy. Even if a carrier already offers a service on a commercial basis, compelling it to provide the service to schools and libraries will inevitably impose costs on the carrier in the form of increased investment in plant and personnel that the

³² 47 U.S.C. § 254(c) (3) .

³³ 47 U.S.C. § 254(h) (2) (A) .

reimbursement scheme is ill-suited to cover. Again, this is a particularly serious problem for new entrants. Placing unnecessary universal service burdens on new entrants will only limit and delay their ability to provide effective competition in the local telephone market. Thus, failure to properly restrict the universal service requirements of Section 254(c)(3) would be antithetical to the Act's primary goal of removing barriers to competitive entry.³⁴

Many companies are in fact offering or have plans to offer advanced telecommunications services to schools and libraries, independent of any special subsidy to do so. Indeed, there is extensive evidence that a wide variety of telecommunications companies are offering an impressive array of telecommunications and information services to public institutional users.

Finally, it is also important that the Commission limit the amount by which core services must be discounted for educational institutions. Under the Telecommunications Act, the Commission is only obligated to require a discounting of services by an amount "appropriate and necessary to ensure affordable access to and use of such services."³⁵ The Commission must ensure that the required discounts do not go beyond these obligations so as to

³⁴ See 47 U.S.C. § 253.

³⁵ 47 U.S.C. § 254(h)(1)(B).

avoid unnecessarily increasing the inefficiencies created by the subsidies.

B. Companies Are Already Providing Both Training And Facilities To Schools And Libraries Without Subsidized Rates.

Since it first began providing "Cable in the Classroom" service in 1989, TCI has been heavily involved in the provision of educational telecommunications services. Its current offerings include the full range of services specifically tailored for schools and libraries. As discussed below, this experience has offered TCI an opportunity to learn what combination of services most effectively assists these institutions.

In general, TCI has approached educational services on two levels: training and facilities. TCI first became involved in training teachers to use technology when it created the J.C. Sparkman Center for Educational Technology in Denver, Colorado. The Sparkman Center is a premiere facility at which TCI conducts training seminars designed to help teachers use telecommunications technologies in the classroom, including computer and CD-ROM, multimedia development, desktop video conferencing, video disc technology, and broadband connectivity to on-line data services and the Internet. In addition to the Sparkman Center, TCI will begin construction soon on a state-of-the-art training facility in Washington, D.C. A third facility is planned for the West Coast. The centers will be linked by DS3

lines to permit the maximum level of interaction between students and teachers at the three locations.

In order to facilitate the Sparkman Center's efforts, TCI has developed a 5-point "Educational Turnkey" solution. This solution integrates TCI's training expertise with the provision of actual facilities for schools. Under the Turnkey approach, TCI offers a complete package of hardware, software, broadband network connections, teacher training, and maintenance support on a leased basis and for a fixed price per student per year.

TCI has successfully implemented the "Turnkey" approach through its "Showcase Schools Project." In the project, TCI collaborates with principals and teachers to design model schools. Combined with the "Turnkey Approach", these efforts have produced dramatic results. For example, in Carrollton, Georgia, TCI built a fiber optic ring around the entire school district, connecting all classrooms and homes, the juvenile justice system, and social service agencies. It also served as systems integrator in networking six multimedia computers and extensive video networks in every classroom.

TCI is a business, and it charges a fee for these services. But the returns for the school district have been substantial, in both educational and monetary terms. The Carrollton school district has experienced an 82 percent decline in dropout rates and significant reductions in failure rates since the beginning of the program. Moreover, as a result of its investment in

technology and training, the school district has saved nearly \$1 million.

TCI's most recent investment in the field of education has been the creation of "Educational Training Communications" ("ETC"). Through ETC, TCI, in partnership with other communications companies and educational institutions, will coordinate its efforts to provide educators with the software, hardware, training, and infrastructure necessary to bring classrooms advanced technologies.

Based on this substantial experience, TCI has learned a great deal about the types of services educators need to improve the classroom experience. Accordingly, TCI provides as part of its "Turnkey approach" such services as: wide area networks; local area networks; school to home connections; broadband Internet connection; hardware (computers, televisions, VCRs); training; and hardware and network support.

TCI's success in providing these services at market-based prices demonstrates that even rural schools do not need federal subsidies in order to purchase them. It is becoming increasingly clear to school administrators across the country that they can afford to invest in advanced services because such investments yield significant returns as quantified by lower dropout ratios and financial savings in remedial and disciplinary programs. The Commission should therefore rely on the market to provide all but the statutorially-mandated core services to schools and libraries.